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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/399,687	09/21/1999	JEAN-MARIE TRAN	NC13800	2549

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EXAMINER

SWICKHAMER, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 10/08/2003

HA

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/399,687

Applicant(s)

TRAN ET AL.

Examiner

Christopher M Swickhamer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8 and 10-19 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the Amendment filed 07/15/03. Amendments to claims 1-19 have been entered. Claims 1-19 are pending. Currently no claims are in condition for allowance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Referring to claims 1 and 16, in lines 10-11 of claim 1 and lines 8-9 in claim 16, the claims state, "when fading . . . causes fading." It is not clear how fading can cause fading. The Examiner will interpret the claim to mean that the channel causes fading in the communication signal sent by the sending station to go beyond a threshold.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 15, 16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Perahia et al (USP 6,070,074, hereafter Perahia).

- Referring to claim 1, Perahia discloses in a communication system having a sending station and a receiving station, the sending station for sending a communication signal upon a communication channel, to the receiving station, the communication channel susceptible to fading and the sending station and the receiving station positioned in a closed-loop power control feedback control arrangement, an improvement of closed loop power control apparatus for selectively controlling power levels of the communication signal sent by the sending station (col. 1, lns. 24-26, col. 4, lns. 10-46), said power control apparatus comprising: a SNR measurement device (determiner) embodied at the receiving station and coupled to receive indications of the communication signal, once transmitted upon the communication channel and received at the receiving station, the SNR measurement device (determiner) for determining, at least when the energy to noise ratio caused by corrupting interference, such as fading, exhibited by the communication channel upon which the communication signal is sent causes energy to noise ratio (fading) of the communication signal by the sending station beyond a selected threshold indicating that there is not enough power in the transmitter to compensate for the fade (Fig. 3, col. 7, lns. 23-26, col. 8, lns. 60-col. 9, lns. 8); and adaptation logic (power controller) also embodied at the receiving station and coupled to receive estimates (indications) of determinations made by said SNR measurement device (determiner), said adaptation logic (power controller) for selectively providing power control change indications of levels responsive to determinations made by said SNR measurement device (determiner) to the sending

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station, the power control change indications forming requests requesting an increase, or decrease, in power levels of the communication signal when subsequently sent by the sending station upon the communication channel (Fig. 3 and 4, col. 8, lns. 8-40, col. 8, lns. 60-col. 9, lns. 18), the power control change indications of levels that request the power levels of the communication signal, subsequently to be sent by the sending station, not to be increased if the SNR measurement device (determiner) determines the energy to noise ratio (fading) of the communication signal to be beyond the selected threshold of what the transmitter can compensate, instead opting to increase the coding gain (col. 9, lns. 1-18).

- Referring to claim 2, Perahia discloses the power control apparatus of claim 1 wherein said SNR measurement device (determiner) is coupled to receive indications of both a energy level (signal strength) of the communication signal and noise levels of noise, said SNR measurement device (determiner) for determining a signal-to-noise ratio and responsive to a value of the signal-to-noise ratio less than a selected value, for sending this information to the adaptation logic for determining the fading exhibited by the communication channel to be beyond the selected threshold of what the transmitter can compensate (col. 5, lns. 5-21, col. 7, lns. 23-36, col. 9, lns. 1-18).

- Referring to claim 3, Perahia discloses the power control apparatus of claim 1 wherein said SNR measurement device (determiner) is further for determining, subsequent to determining when the fading exhibited by the communication channel is beyond the selected threshold, when the fading exhibited by the communication channel returns to be within the selected threshold, said adaptation logic (determiner) for determining the fading to be within the selected threshold responsive to the value of a signal-to-noise ratio returning to be greater than a selected value

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(col. 7, lns. 23-36, col. 8, lns. 60-col. 9, lns. 18). The SNR measurement device and the Adaptation logic work together in a loop (Fig. 4) to make sure that the communication system is transmitting at a desired operating point.

- Referring to claim 4, Perahia discloses the power control apparatus of claim 3 wherein said Adaptation logic (power controller) further provides power control change indications to the sending station to request an increase in power levels of the communication signal when the fading exhibited by the communication channel returns to be within the selected threshold (Fig. 4, col. 8, lns. 60-68).

- Referring to claim 15, Perahia discloses the power control apparatus of claim 13 wherein the communication channel comprises a downlink (forward-link) traffic channel and wherein said SNR measurement device (determiner) determines whether the down (forward) link traffic channel exhibits multipath fading (deep fade condition, col. 1, lns. 24-37, col. 5, lns. 23-30, col. 7, lns. 23-36, col. 9, lns. 1-18).

- Referring to claim 16, Perahia discloses a closed-loop power control method for selectively controlling power levels of a communication signal sent by a sending station upon a communication channel to a receiving station, the communication channel susceptible to multipath fading and the sending station and the receiving station positioned in a closed-loop power-control feedback control arrangement (col. 1, lns. 24-26, col. 4, lns. 9-46), said method comprising: a SNR measurement device for determining at the receiving station, responsive to indications of the communication signal once transmitted the communication channel and received at the receiving station, at least when fading exhibited by the communication channel upon which the communication signal is sent by the sending station causes fading of the

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communication signal beyond a selected threshold of what the power level can be adjusted to compensate for the low power level (Fig. 3, col. 7, lns. 23-36, col. 8, lns. 60-col. 9, lns. 18); and selectively providing formed power control change indications to the sending station responsive to determinations made during said operation of determining, the power control indications of levels forming requests requesting an increase, or decrease, in power levels of the communication signal when subsequently sent upon the communication channel (col. 8, lns. 60-col. 9, lns. 18), the power control change indications of levels that request the power levels of the communication signal, subsequently to be sent, not to be increased if the fading of the communication signal determined during said operation of determining is determined to be beyond the selected threshold, instead opting to increase the coding gain; and returning the power control change indications selectively formed during said operation of selectively forming, to the sending station (col. 8, lns. 60-col. 9, lns. 18).

- Referring to claim 18, Perahia discloses the method of claim 16 comprising the additional operations of: subsequently determining when fading exhibited by the communication channel no longer causes fading of the communication signal beyond the selected threshold; and re-enabling normal power control change indications to the sending station (col. 8, lns. 60-col. 9, lns. 18).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 8, 10-14, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perahia in view of Jalali et al (USP 6,154,659, hereafter Jalali).

- Referring to claim 8, Perahia discloses the power control apparatus of claim 1, but does not expressly disclose wherein a pilot signal is further broadcast by the sending station to the receiving station and wherein said determiner is coupled to receive indications of both a signal strength of the pilot signal and an average value of the signal strength of the pilot signal, said determiner for comparing the indications of the signal strength of the pilot signal with the indications of the average value to form a comparison therebetween, said determiner for determining the fading exhibited by the communication channel to be beyond the selected threshold when the comparison is less than a selected level. Jalali discloses a system for controlling the power between a receiving station and a sending station where the sending station broadcasts a pilot signal where the receiver compares the average energy to noise ratio of the received signal to a specified threshold, and where the receiving station determines if the pilot signal is below a specified level to determine that the carrier signal is in a fade (col. 26, lns. 42-43, col. 27, lns. 5). The system of Perahia could be modified to broadcast a pilot signal and to use average information on the signal to noise ratio of the broadcast signal, as well as comparing a pilot signal to a specified level to determine if the signal is experiencing a fade. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the system of Perahia, with a pilot signal and to maintain average information on the signal to determine if the carrier is experiencing a fade. One of ordinary skill in the art would have been motivated to do this since satellite communication power control and cellular power control face

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similar obstacles. Multipath fading occurs both in a satellite system, and in a cellular system. Both systems require power control to combat fading to ensure signal integrity and adequate communication levels over the wireless links.

- Referring to claims 10 and 17, Perahia discloses the power control apparatus of claims 1 and 16, but does not expressly disclose wherein said power controller further provides at least one power control change indication to the sending station to request a decrease in the power levels of the communication signal if the determiner determines the fading of the communication signal if the determiner determines the fading of the communication signal to be beyond the selected threshold. Jalali discloses a system that monitors a communication channel to determine if the signal is experiencing a fade and that the receiver requests that the transmission power should be decreased (col. 26, lns. 42-col. 27, lns. 5). The system of Perahia could be modified so that when the energy to noise ratio dropped below a threshold, the receiver instructed the power level of the transmitted signal to be decreased. One of ordinary skill in the art would have been motivated to do this since decreasing the transmission power during a fade can improve the overall system performance by decreasing interference in the system (col. 27, lns. 1-5).

- Referring to claim 11, Perahia discloses the power control apparatus of claim 10 wherein said power controller provides a selected plurality of power control change indications to the sending station to request the decrease in the power levels of the communication signal by a selected magnitude of power level decrease (col. 8, lns. 40-60).

- Referring to claim 12, Perahia discloses the power control apparatus of claim 11 wherein, subsequent to providing the selected plurality of power control change indications to the sending station, said power central controller provides subsequent power control change

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indications to the sending station to maintain the decrease in the power levels of the communication signal to be of the selected magnitude of power level decrease (col. 8, lns. 40-60). The system maintains the optimal operating point until a change in the wireless communication path changes between the transmitter and receiver.

- Referring to claims 13, 14 and 19, Perahia discloses the method of claims 1, 13 and 16 respectively, but does not expressly disclose wherein the sending station comprises a base station of a CDMA cellular communication system and the receiving station comprises a mobile station end wherein said operations of determining, and selectively forming, and returning are performed at the mobile station. Jalali discloses a CDMA cellular system that uses power control between the base station and the mobile station where the mobile station issues power control commands to the base station (abstract, col. 1, lns. 58-col. 2, lns. 35). The system of Perahia could be modified so that the originating ground station is a base station, and the destination ground station is a mobile device in a cellular environment. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the power control system of Perahia to be used in a CDMA cellular environment. One of ordinary skill in the art would have been motivated to do this since satellite communication power control and cellular power control face similar obstacles. Multipath fading occurs both in a satellite system, and in a cellular system. Both systems require power control to combat fading to ensure signal integrity and adequate communication levels over the wireless links.

Allowable Subject Matter

8. Claims 5-7 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- Referring to claim 5, claim 5 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose an apparatus wherein said determiner is coupled to receive indications of power control change indications previously provided by said power controller to the sending station, said determiner for determining the fading exhibited by the communication channel to be beyond the selected threshold when a selected number of successive power control change indications previously provided by said power controller request increase in the power levels of the communication signal. It is noted that the closest prior art, Perahia et al (USP 6,070,074), discloses a similar apparatus for power control. However, Perahia et al fails to disclose a determiner for determining that the fade exhibited by the communication channel is beyond a selected threshold when a selected number of successive power control change indications by the power controller request increases on the power level of the communication signal as claimed.

- Referring to claim 9, claim 9 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose an apparatus wherein a pilot signal is further broadcast by the sending station to the receiving station and wherein said determiner is coupled to receive indications of a derivative of signal strength of the pilot signal, said determiner for determining the fading exhibited by the communication channel when the derivative is at least a selected negative value. It is noted that the closest prior art,

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Perahia et al (USP 6,070,074), discloses a similar apparatus for power control. However, Perahia et al fails to disclose receive indications of a derivative of signal strength of the pilot signal, said determiner for determining the fading exhibited by the communication channel when the derivative is at least a selected negative value as claimed.

Response to Arguments

9. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Esmailzadeh et al, UP 2003/0130004 A1, *Transmission Control Method and Apparatus for Mobile Communication System*.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M Swickhamer whose telephone number is (703) 306.4820. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (703) 305-4744. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305.3900.

CMS
September 30, 2003


HASSAN KIZOU
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